

# Weekly report

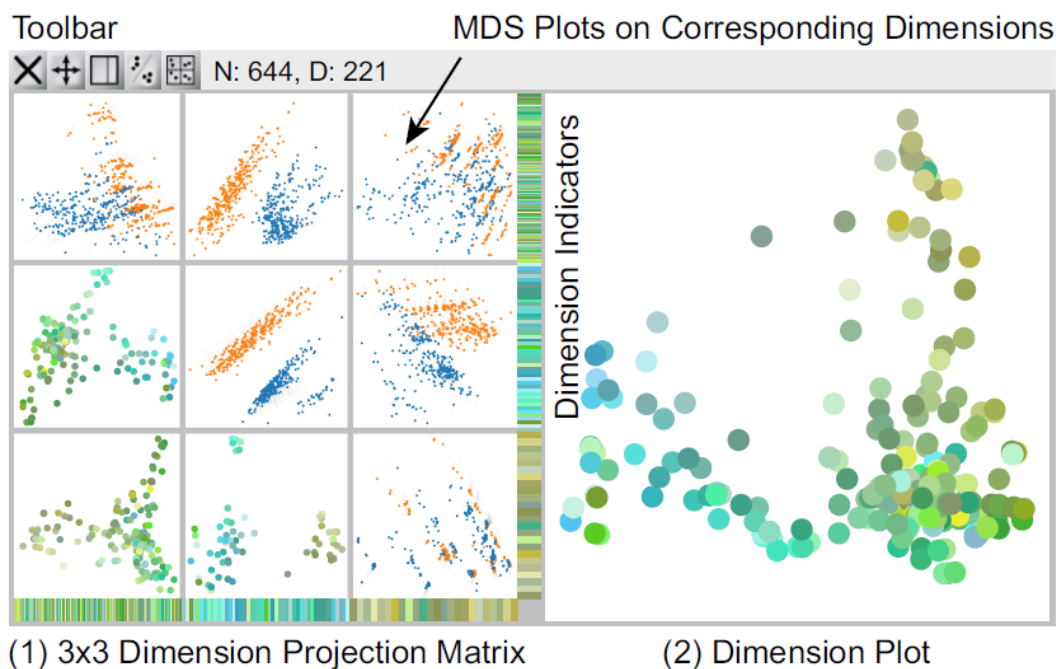
## 1 Done

### 1.1 Reading (mainly about subspace and multi-dimension data)

#### 1.1.1 Dimension Projection Matrix/Tree: Interactive Subspace Visual

Exploration and Analysis of High Dimensional Data (Xiaoru Yuan)

The upper right cells of the matrix show Dimension Projection (MDS) of data items on the corresponding dimensions, while the lower left cells of the matrix show Dimension Projection of the corresponding dimensions.



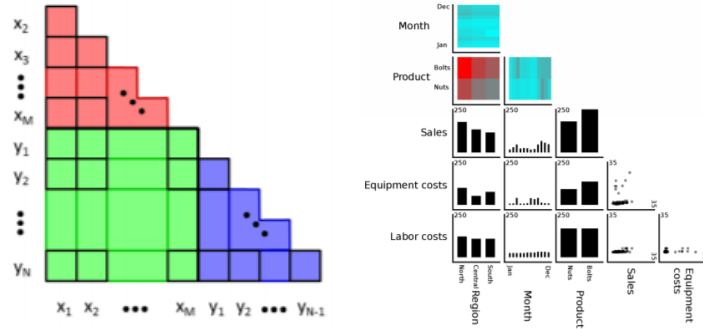
Guidelines about exploring subspaces:

- Group the dimensions into several clusters, each of which represents a subspace in which the dimensions are correlated.
- Select a few dimensions from each cluster to form a subspace

#### 1.1.2 GPLOM: The Generalized Plot Matrix for Visualizing

Multidimensional Multivariate Data (Jean-Francois Im)

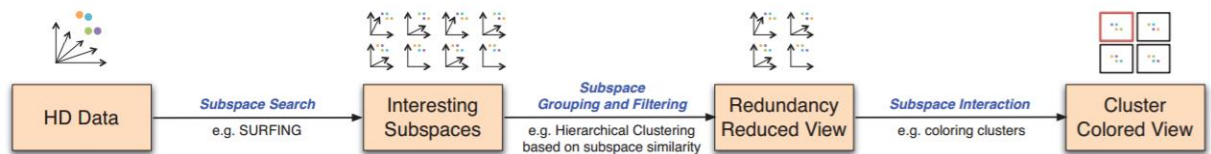
Different layouts are good at visualize different types of variables. GPLOM extend the functionality of the scatter matrix by replacing some scatter plots into appropriate layouts.



The red region contains pairs of categorical variables, and GPLOM visualizes these with heatmaps. The green region contains pairings of a continuous vs categorical variable, shown as barcharts. The purple region contains pairs of continuous variables, shown as scatterplots. An example is shown on the right.

### 1.1.3 Subspace Search and Visualization to Make Sense of Alternative

#### Clusterings in High-Dimensional Data (Andrada Tatu)



This is an analysis pipeline of high dimensional data proposed in this paper. It applies a subspace selection algorithm to automatically identify a candidate set of interesting subspaces. A filtering step reduces the potentially large and redundant set of automatically obtained subspaces to a user-selectable number of representing subspaces. Visual-interactive user exploration then proceeds on the subspace representations. Subspace analysis is also supported by comparative cluster views, allowing users to identify meaningful similar, complementary or even conflicting clustering structures in the set of subspaces.

### 1.1.4 Re-NUCA: A Practical NUCA Architecture for ReRAM based

#### last-level caches (Jagadish B. Kotra)

##### Concepts:

- NUCA: a multi-bank cache where each bank is connected to one core (the number of banks is usually kept equal to the number of cores) and a switched network handles data movement between banks.
- S-NUCA: a cache block(line) is mapped to the cache banks using a subset of bits in address and hence bank assignment is fixed.
- D-NUCA: each cache block can be in any bank and the switched network allows data to migrate cross different cache banks.
- R-NUCA: a realistic implementation of D-NUCA, allowing data migration in

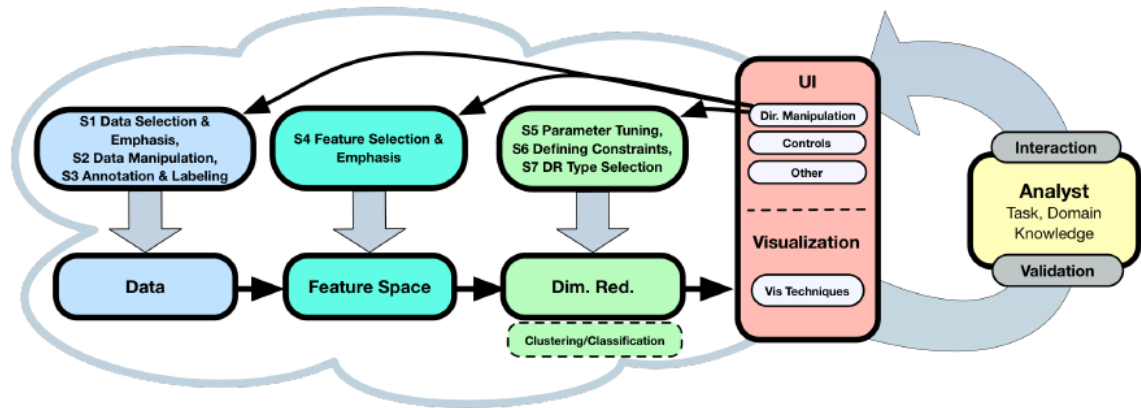
NUCA but limits it to few banks close the target core.

This paper proposed a novel Re-NUCA mechanism combining R-NUCA and S-NUCA schemes to wear-level the caches without degrading performance.

### 1.1.5 Visual Interaction with Dimensionality Reduction: A Structured

#### Literature Analysis (Dominik Sacha)

The pipeline below is a “human in the loop” process model for interactive DR. Users need iteratively refine the analysis via interaction. The visualization interface (red part) connect users and the DR(dimensionality reduction) pipeline. It presents or updates the DR results and accepts feedback.



This paper systematically analyzes and common DR operations and summarize them into seven guiding scenarios. What this paper wants to tell us is that DR can be enriched by user interaction (moving points, selecting, marking, drawing, etc.). The more interactive control supported in the visual analysis system, the greater opportunity for users to explore useful information.

## 1.2 Submission

In all, the schedule of this submission is not very appropriate. Because of the slow progress in the early time, we have to rush to catch the deadline. However, it is a good experience to learn how to arrange schedule and polish paper.

## 1.3 Homework

## 2 To Do

### 2.1 RelationLine

Handover relevant work with Jing Xia and design new color mapping algorithm.

### 2.2 New issue about privacy

Refine my idea and brainstorm about this on next Friday (12.23).

### 2.3 Final review